

Emmanuel Prestat, PhD in Bioinformatics

CONTACT INFORMATION	850 Steiner Street San Francisco, CA, 94117 USA	<i>E-mail:</i> emmanuel.prestat.pro@gmail.com <i>Mobile:</i> +1 415-283-6674 <i>Blog:</i> http://exploringlifedata.blogspot.com
CITIZENSHIP	France	
EMPLOYMENT	Postdoctoral Fellow Earth Sciences Division, Ecology Department, Lawrence Berkeley National Laboratory TOPIC: <i>Meta-omics analysis of microbial carbon cycling responses to altered rainfall inputs in native prairie soils. Biostatistical and bioinformatic analyses.</i> Advisors: Ari Jumpponen (associate professor), Kansas State University and Janet Jansson (Professor and Senior Staff Scientist), Lawrence Berkeley National Laboratory OTHER PROJECT: member of the Earth Microbiome Project core analysis group (http://www.earthmicrobiome.org). Project coordinator: Professor Jack A. Gilbert	October 2011 to present
	Postdoctoral Fellow Environmental Microbial Genomics Group, Ampere Laboratory, Ecole Centrale de Lyon Topic: <i>Exploration of soil metagenomics and metaproteomics data. Biostatistical and bioinformatical analyses.</i> Advisor: Professor Timothy M. Vogel	June 2009 to September 2011
RESEARCH INTERESTS	Bioinformatics, Biostatistics, Bayesian Networks, Metagenomics, Microbiomes (human gut and environmental), Next Generation Sequencing data analysis, Genetic Networks.	
EDUCATION	Université Claude Bernard Lyon 1 , Villeurbanne, France Ph.D. , Biometry and Evolutive Biology Laboratory, May 2010 <ul style="list-style-type: none">Thesis Topic: <i>Classification and capture of genetic regulation networks with Bayesian Networks in oncology.</i>advisor: Professor Christian GautierArea of Study: Bioinformatics Professional Master, Biometry and Evolutive Biology Laboratory, September 2005 <ul style="list-style-type: none">Thesis Topic: <i>Interactive Microarray Data Management System for Phylochip Data Mining</i>advisor: Professor Christian GautierArea of Study: Bioinformatics Université Joseph Fourier , Grenoble, France Research Master, Techniques for biomedical engineering and complexity management informatics, mathematics and applications Laboratory Grenoble, September 2004	

- Thesis Topic: *Quality control of the image acquisition step of microarrays: development of a measurements protocol, and a R implemented method to correct data extracted from microarray images.*
- Models and Instruments in Medecine and Biology
- advisor: Doctor Francoise Giroud

REFEREE SERVICE *Bioinformatics, Oxford, UK*
Research in Microbiology, Pasteur Institute, France

REFEREED JOURNAL PUBLICATIONS	<u>Prestat E.</u> , Rodrigues de Moraes S., Vendrell J., Thollet A., Gautier C., Cohen P., and Aussem A. Learning the local Bayesian network structure around the ZNF217 oncogene in breast tumours. <i>Computers in Biology and Medicine</i> . In Press.
	<u>Bælum, J.</u> , <u>Prestat, E.</u> , David, M. M., Strobel, B. W., and Jacobsen, C. S. Modelling phenoxy acid herbicide mineralization and growth of microbial degraders in 15 soils monitored by quantitative real-time PCR of the functional tfdA gene. <i>Applied and Environmental Microbiology</i> . 2012
	<u>Delmont, T. O.</u> , Malandain, C., <u>Prestat, E.</u> , Larose, C., Monier, J.-M., Simonet, P. and Vogel, T. M. Metagenomic mining for microbiologists. <i>The ISME Journal</i> , 5(12), 18371843. 2012.
	<u>Delmont, T. O.</u> , <u>Prestat, E.</u> , Keegan, K. P., Faubladier, M., Robe, P., Clark, I. M., et al.. Structure, fluctuation and magnitude of a natural grassland soil metagenome. <i>The ISME Journal</i> . 2012
	<u>Lombard, N.</u> , <u>Prestat, E.</u> , Van Elsas, J. D. and Simonet, P. Soil-specific limitations for access and analysis of soil microbial communities by metagenomics. <i>FEMS Microbiology Ecology</i> , 78(1), 3149. 2011
ARTICLE IN REVISION OR SUBMITTED OR IN PREPARATION	<u>Prestat E.</u> , David M.M., Mavromatis K., Jansson J.K. SoilFam: functional ontology and proteic HMM models to analyse soil microbiomes. Submitted to <i>NAR</i> .
	<u>David M.</u> , Cecillon S., <u>Prestat E.</u> , Jansson J.K. and Vogel T.M. The microbial ecology of chlorinated solvent biodegradation. Submitted to <i>PNAS</i> .
	<u>Prestat E.</u> , Delmont T.O. and Vogel T.M. A clustering approach to analyse unbinned metagenomic sequences and to discover novel genes. Application to the UK Rothamsted Park Grass Soil. In prep.
	<u>Aussem A.</u> , Rodrigues de Moraes, S. and <u>Prestat E.</u> Robust gene selection using Bayesian networks: Application to Breast Cancer. In prep.
CONFERENCE AND WORKSHOP TALKS	<u>Prestat E.</u> , Delmont, T. and Vogel T.M. Using non-annotated metagenomic sequences to discover novel functions and genes, and to cluster communities. <i>2nd Annual Argonne National Laboratory Soils Workshop, Argonne (IL), USA</i> , October 8, 2010.
	<u>Prestat E.</u> , Aussem A., Rodrigues de Moraes, S. and Rome S. Robust gene selection from microarray data using Bayesian networks: Application to breast cancer and diabetes analysis. <i>Modgraph, JOBIM satellite meeting, Nantes, France</i> , 8th of June, 2009.
	<u>Prestat E.</u> and Gautier C. Using bayesian networks in cancer research. <i>International conference on system science in health care, Lyon, France</i> , 3rd of September, 2008.

Prestat E. and Gautier C. Modeling pharmacogenomics data with Bayesian Networks.
Workshop on Modeling of Genetic Regulatory and Metabolic Networks, Valparaiso, Chile, 28th of March, 2008.

CONFERENCE AND WORKSHOP
CONFERENCES AND WORKSHOPS

Prestat E., Delmont, T. and Vogel T.M. Novel functions and gene discovery from non-annotated metagenomic sequences. *ISME13, Seattle (WAS), USA*, August, 2010.

POSTERS

Prestat E. and Gautier C. Using bayesian networks in cancer research. *International conference on system science in health care, Lyon, France*, 3rd of September, 2008.

Prestat E., Oger C., Remenant B., Sanguin H., Grundmann G., Vogel T.M., Gautier C. Interactive Microarray Data Management System. *Cost Meeting, Lyon, France*, November, 2005.

Prestat E., Oger C., Remenant B., Sanguin H., Grundmann G., Vogel T.M., Gautier C. Interactive Microarray Data Management System: A tool to help with the design and analysis of phylogenetic microarrays for the study of bacterial communities. *8th international symposium BAGECO, Lyon, France*, June, 2005.

SEMINAR

Prestat E. and Gautier C. Some bioinformatics tools for studying biodiversity. *Universidade federal de Mato Grosso do Sul, Campo Grande, Brazil*, 30th of November, 2006.

AWARD

Best poster award (3000 euros price). Using bayesian networks in cancer research. *International conference on system science in health care, Lyon, France*, 3rd of September, 2008.

TEACHING EXPERIENCE
(164H)

INSA Lyon engineering school, Villeurbanne, France

Bioinformatics and modeling - year 4 **2011 (8h)**

- Transcriptome analysis within the *R* environment and the *Bioconductor* package

Biochemistry and biotechnology - year 5 **2008, 2010 (44h)**

- Introduction to bioinformatics
- Introduction to transcriptome analysis
- Databases mining in biology
- Transcriptome analysis within the *R* environment and the *Bioconductor* package

Medecine Faculty of Laennec, Université Claude Bernard Lyon 1, Lyon, France

Health and drug engineering - Master **2008 (4h)**

- Introduction to transcriptome analysis with microarrays
- Using Bayesian Networks to infer biological networks

Biology department, Université Claude Bernard Lyon 1, Villeurbanne, France

Life science - 1st year of Master degree **2011 (20h)**

- Solving ordinary differential equations in \mathbb{R} and \mathbb{R}^2
- Analysis of dynamic biological systems with ordinary differential equations.

Life science - 2nd year Licence

2006, 2007 (88h)

- Biostatistics
- Bioinformatics
- Relational database creation and queries using SQL

TRAINING
EXPERIENCE

Analyzing metagenomic fingerprints with parametric and non-parametric multivariate statistical methods
2010 (10h)

Introduction to Sweave: a *R* and *LAT_EX* framework to edit updatable statistical analysis documents.
2007 (1h)

STATISTICAL
EXPERTISE

Parametric and non-parametric models to analyse univariate and multivariate datasets (regression, hypothesis testing, NMDS, PCA, Correspondance Analysis, CCA, BGA, WGA, discriminant analysis).

Classification and clustering (Bayesian Networks, SVM, Naive Bayes, K-Means)

MATHEMATICAL
EXPERTISE

Matrix models and ODE for dynamic systems.

TECHNICAL SKILLS

PROGRAMMING: Python (with MPI), R, MatLab, Java, JavaScript, PHP, UNIX shell scripting, SQL.

Public (Google Code) repository: <http://code.google.com/p/bioman>

CLUSTER, GRID AND CLOUD COMPUTING (as a NERSC - <http://www.nersc.gov> - and Amazon EC2 user).

Bioinformatic and statistic softwares:

R: BioConductor, ADE4, vegan, SeqinR packages.

MATLAB: Bioinformatics, Bayesian Networks Toolboxes.

WEKA: A machine learning feature selection, classification, and clustering tool.

Sequences similarity search or MSA tools: BLAST, HMMER, SOAP, muscle, clustalw, t_coffee.

Phylogenetic tree reconstruction: PhyML, Neighbor-Joining, Parsimony, MrBayes, Fasttree, RaxML.

Hardware and software installation, management of multiprocessor UNIX systems.

Computer Applications: Subversion, Git, TeX (LATEX, BIBTeX), Sweave, most common productivity packages (for Windows, Mac OS X, and Linux platforms), Emacs, Vi.

BIOLOGICAL
EXPERTISE

REFERENCES
AVAILABLE TO
CONTACT

Metagenomics, Transcriptomics, Cell Molecular Networks (genetic and metabolic) .

Dr. Ari Jumpponen (e-mail: ari@ksu.edu; phone: +1 785-532-6751)

- Associate Professor, **Kansas State University**, Manhattan, KS, USA
- *Dr. Jumpponen is my project PI.*

Dr. Janet R. Jansson (e-mail: jrjansson@lbl.gov; phone: +1 510-486-7487)

- Professor, **Lawrence Berkeley National Laboratory**, Berkeley, CA, USA
- *Dr. Jansson is my project co-PI, I am working under her supervision at Berkeley Lab.*

Dr. Tim M. Vogel (e-mail: tim.vogel@ec-lyon.fr; phone: +33 4 72 18 65 14)

- Professor, **Université Claude Bernard Lyon 1**, Villeurbanne, France and **Ecole Centrale de Lyon**, Ecully, France
- *Dr. Vogel was my Postdoctoral fellow advisor.*

Dr. Pascal Simonet (e-mail: pascal.simonet@ec-lyon.fr; phone: +33 4 72 18 60 92)

- CNRS Research Director, **Ecole Centrale de Lyon**, Ecully, France
- *Dr. Simonet was my Postdoctoral fellow group leader.*

Dr. Christian Gautier (e-mail: christian.gautier@univ-lyon1.fr;
phone: +33 4 26 23 44 71)

- Professor, **Université Claude Bernard Lyon 1**, Villeurbanne, France
- *Dr. Gautier was my PhD thesis and professional master advisor.*

Dr. Marie-France Sagot (e-mail: marie-france.sagot@univ-lyon1.fr;
phone: +33 4 72 44 82 38)

- INRIA Research Director, **Université Claude Bernard Lyon 1**, Villeurbanne, France
- *Dr. Sagot was my PhD thesis and professional master group leader.*

Dr. Dominique Mouchiroud (e-mail: dominique.mouchirou@univ-lyon1.fr;
phone: +33 4 72 43 26 28)

- Professor, **Université Claude Bernard Lyon 1**, Villeurbanne, France
- *Dr. Mouchiroud (at the head of my PhD thesis lab) has proposed to me most of my teaching experiences.*

Dr. Francoise Giroud (e-mail: francoise.giroud@imag.fr; phone: +33 4 76 54 94 64)

- Assistant professor, **Université Joseph Fourier Grenoble I**, La Tronche, France
- *Dr. Giroud was my research master advisor.*